The invention claimed is:

1. A flexible skin, comprising:
a bidirectional spring, encapsulated within
a flexible solid.

2. A flexible skin according to claim 1, wherein the flexible solid is an elastomeric material.

3. A flexible skin according to claim 2, wherein the elastomeric material is rolled.

4. A flexible skin according to claim 2, wherein the elastomeric material is cast.

5. A flexible skin according to claim 2, wherein the elastomeric material is poured.

6. A flexible skin according to claim 2, wherein the elastomeric material is sprayed.

7. A flexible skin according to claim 2, wherein the elastomeric material is dipped.

8. A flexible skin according to claim 1, wherein the bidirectional spring has flexural properties that vary between the two axes.

9. A flexible skin according to claim 1, wherein flexible printed circuitry is carried by the bi-directional spring.

10. A flexible skin according to claim 1, further comprising:
a second bidirectional spring, encapsulated within

a second flexible solid,

the second flexible solid being adhered in a layered manner to the flexible solid.

11. A flexible skin, comprising:
a bi-directional spring, skeletally attached to
a flexible membrane.

12. A flexible skin according to claim 11, wherein the flexible membrane attaches to one side of the bi-directional spring.

13. A flexible skin according to claim 11, wherein the flexible membrane attaches to both sides of the bi-directional spring.

14. A method for fabricating a flexible skin, comprising the steps of:
producing a bi-directional spring, and
embedding the bi-directional spring in a flexible solid.

15. A method for fabricating a flexible skin according to claim 14, wherein the bi-directional spring is produced by chemically etching a sheet of material.

16. A method for fabricating a flexible skin according to claim 14, wherein the bi-directional spring is produced by cutting a pattern from a sheet of material, using a rapid cutting process.

17. A method for fabricating a flexible skin according to claim 16, wherein the rapid cutting process is a laser cutting process.

18. A method for fabricating a flexible skin according to claim 16, wherein the rapid cutting

process is a waterjet cutting process.

19. A method for fabricating a flexible skin according to claim 14, wherein the bi-directional spring is produced from a metallic material.

20. A method for fabricating a flexible skin according to claim 14, wherein the bi-directional spring is produced from a plastic composite material.

21. A method for fabricating a flexible skin according to claim 14, wherein the bi-directional spring is embedded in the flexible solid by dipping the bi-directional spring in an uncured elastomer and then curing the elastomer.

22. A method for fabricating a flexible skin according to claim 14, wherein the bi-directional spring is embedded in the flexible solid by spraying elastomeric material over the bi-directional spring.

23. A method for fabricating a flexible skin according to claim 14, wherein the bi-directional spring is embedded in the flexible solid by pouring elastomeric material over the bi-directional spring.

24. A method for fabricating a flexible skin according to claim 14, wherein the bi-directional spring is embedded in the flexible solid by brushing elastomeric material over the bi-directional spring.

25. A method for fabricating a flexible skin, comprising the steps of:

producing a bi-directional spring, and

adhering a flexible membrane to a surface of the bi-directional spring.

26. A method for fabricating a flexible skin, comprising the steps of:
producing a bi-directional spring, and
adhering a flexible membrane to each surface of the bi-directional spring.

27. A method for fabricating a flexible skin according to claim 25, further comprising the step of adhering a second flexible skin to the flexible skin.

28. A method for fabricating a flexible skin according to claim 14, further comprising the step of adhering a second flexible skin to the flexible skin.

29. A flexible skin according to claim 1, further comprising a piezoelectric element embedded within the flexible solid.

30. A flexible skin according to claim 11, further comprising a piezoelectric element bonded to a surface of the bi-directional spring.

31. A flexible skin according to claim 11, further comprising a piezoelectric element bonded to the flexible membrane.

32. A method for fabricating a flexible skin according to claim 25, further comprising the step of bonding a piezoelectric element to a surface of the bi-directional spring.

33. A method for fabricating a flexible skin according to claim 25, further comprising the step of bonding a piezoelectric element to the flexible membrane.

34. A method of fabricating a flexible skin according to claim 14, further comprising the step of embedding printed circuitry within the flexible solid.

35. A method for fabricating a flexible skin according to claim 25, further comprising the step of bonding printed circuitry to a surface of the bi-directional spring.

36. A method for fabricating a flexible skin according to claim 25, further comprising the step of bonding printed circuitry to the flexible membrane.